IOP Conference Series: Materials Science and Engineering 2016 vol.158 N1

Computer modeling of capillary flow with superimposed pulsations

Yaganova A., Marfin E.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© Published under licence by IOP Publishing Ltd.Increasing efficiency of methods of oil production can be achieved by the influence of elastic vibrations. It is a well-known fact that shift viscosity of oil changes under the effect of elastic vibrations. This change depends on properties of the oil and exposure mode. Existing approaches to the research of the way wave exposure impacts on viscosity are based on measuring it after the processing. This article concerns development of methods to measure viscosity of liquid right during its exposure to elastic vibrations. The suggested approach is based on combining numerical and natural experiments. We investigated the pulsating flow of viscid liquid in a capillary numerically in this article. We received allocations of fields of average velocity and pressure in a capillary. It is demonstrated that imposed pulsations in a capillary do not impact on hydrodynamics of the flow. We offered the scheme of an experimental installation for a research of the impact that wave exposure has on the viscosity of liquids. The installation is based on a capillary viscometer.

http://dx.doi.org/10.1088/1757-899X/158/1/012096